



# Free Match Series R410A GMV Multi VRF Cassette Type Indoor Unit (For North America)

Owner's Manual  

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Commercial Air Conditioners



Thank you for choosing Commercial Air Conditioners, please read this owner's manual carefully before operation and retain it for future reference.



## User Notice

◆ The total capacity of the indoor units which runs at the same time can not exceed 150% of that of outdoor units; otherwise, the cooling (heating) effect of each unit would be poor.

◆ A breaker (or fuse) needs to be installed in every indoor unit, and the capacity should be in accordance with indoor unit's electrical parameter; all the indoor units are required to be centralized controlled by a main switch, this switch can cut off the electric power supply in case of emergency. The breaker (or fuse) on each indoor unit has the function of preventing short circuit and avoiding abnormal overload, it should be connected in normal situation. The main switch controls the power supply of all the indoor units. Before cleaning and maintaining the indoor units, it is very important to turn off the main power supply switch.

◆ In order to turn on the units successfully, the main power switch should be opened 8 hours before the operation.

◆ It is a normal phenomenon that the indoor unit will still run for 20-70 seconds after the indoor unit receives the "stop" signal so as to make full use of after-heat for the next operation.

◆ When the running modes of the indoor and outdoor units conflict, it will be indicated on the display of the wired controller in five seconds and then the indoor unit will stop. At this time, change the operation mode of the indoor unit to the one that would not clash with the outdoor operating mode to make the operation normal. The HEAT mode conflicts with each of the COOL mode, DRY mode and FAN mode, while the COOL mode, DRY mode and FAN mode are compatible between each other.

◆ The appliance shall not be installed in moist places, such as laundry.

◆ An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

◆ Main switch is provided by end user. Main switch knob should be in black or gray, it can be locked on "OFF" with padlock.

◆ The instruction of main power switch should be included in user manual and the recommended installing height should be at 0.6-1.7m. And also over current protection is required (UL 1995, CSA C22.2).

◆ The outdoor ambient temperature of the unit under cooling mode ranges from -5~48°C DB. The outdoor ambient temperature of the unit (only for the heat pump type unit) under heating mode ranges from -15~27°C WB.

◆ This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.



This product must not be disposed together with the domestic waste. This product has to be disposed at an authorized place for recycling of electrical and electronic appliances.

**Thank you for selecting Blueridge air conditioner. Before use, please read this manual carefully and keep it properly for further reference.**

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# 1 Safety Precautions

Please read this manual carefully before using this unit, and operate it correctly according to the guide in this manual.

Please take special attention to the meaning of these two marks:

 **Warning!** It indicates improper operation which will lead to human casualty or severe injury.

 **Note!** It indicates improper operation which will lead to injury or property damage.

 **Warning:**

◆ Do not adopt fuse with unsuitable capacity or adopt iron wire instead of fuse, otherwise malfunction or fire may happen.

◆ Turn off the main power switch immediately if malfunction (such as smell the burning odor etc.) happens.

◆ Keep good ventilation in the room to avoid oxygen deficit.

◆ Don't insert finger or stick-like objects into the air inlet/outlet grille.

◆ Please install the unit in a place where is strong enough to withstand the weight of the unit; otherwise, the unit would fall down and cause injury or death.

◆ Don't apply or spray and paint or insecticide on the surface of unit, otherwise, fire may happen.

◆ Never refit the unit and contact the sales agent or the professional installation personnel for the repair or relocation of the unit.

**An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.**

 **Note:**

◆ Before using the unit, please check if the piping and wiring are correct to avoid water leakage, refrigerant leakage, electric shock, or fire etc.

◆ The main power supply must be earthed soundly to avoid the hazard of electric shock and never connect this earth wire to the gas pipe, running water pipe, lightning rod or phone cable's earth lead.

◆ Turn off the unit after it runs at least five minutes; otherwise its service life will be shortened.

◆ Don't allow children operate the air conditioner.

◆ Don't allow children operate the air conditioner.

◆ Please turn off the main power of the unit before cleaning the conditioner or change the filter.

◆ Please cut off the main power if the conditioner will not be used for a long time.

## 2 Installation of the Cassette Type Indoor Unit

### 2.1 Schematic Diagram of Installation Spaces

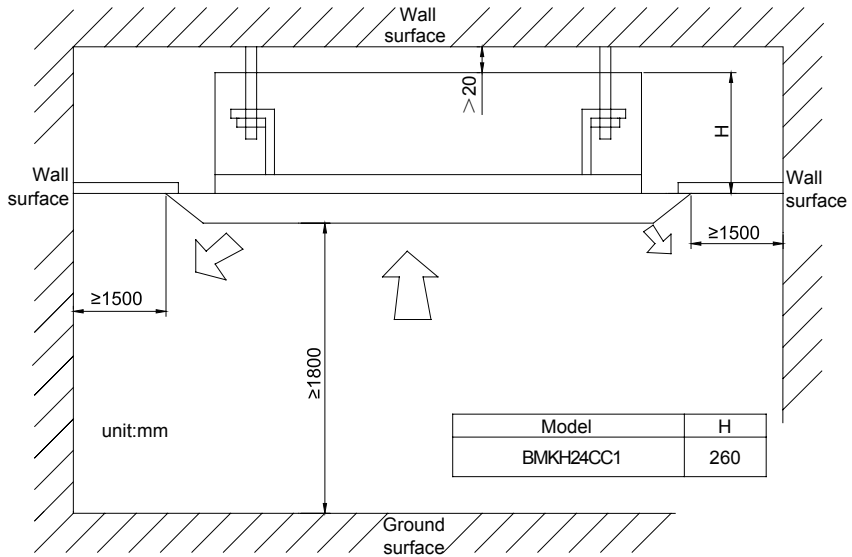


Fig.1

### 2.2 Installation Location of the Indoor Unit

- (1). Obstruct should be taken away from the inlet or outlet of the indoor unit so that the airflow can be blown though all the room.
- (2). Ensure the installation work is done as per the schematic diagram of installation spaces.
- (3). Select a place where is strong enough to withstand 4 times of the weight of the indoor unit; otherwise it would incur vibration and noise.
- (4). Ensure the installation place is at horizontal level.
- (5). Select a place where the condensate water is easily drained out and the drain pipe can be easily connected with outdoor unit.
- (6). Make sure that there is enough space for care and maintenance. Make sure that the distance between the indoor unit and ground is above 1800mm.
- (7). When installing the steeve bolt, check if the installing place can stand 4 times of the weight of the units. If not, reinforce before installation. (Refer to the installation cardboard and find where should be reinforced)

#### **⚠ Note!**

There will be lots of lampblack and dust sticking on the acentric, heat exchanger and water pump in dining room and kitchen, which would reduce the capacity of heat exchanger, lead water leakage and abnormal operation of the water pump. **The following treatment should be taken under this circumstance:**

- 1). Ensure that the smoke trap above cooker has enough capacity to obviate lampblack to prevent the indraft of the lampblack by the air conditioner.

- 2). Keep the air conditioner far from the kitchen so that the lampblack would not be indraft by the air conditioner.

**2.3 Important Notice:**

- ◆ To guarantee the good performance, the unit must be installed by technician according with this instruction.
- ◆ Please contact the local Blueridge special nominated repair department before installation. Any malfunction caused by the unit that is installed by the department that is not special nominated by Blueridge would not deal without time by the inconvenience of the business contact.

**2.4 Dimension of Ceiling Opening and Location of the Hoisting Screw (M10)**

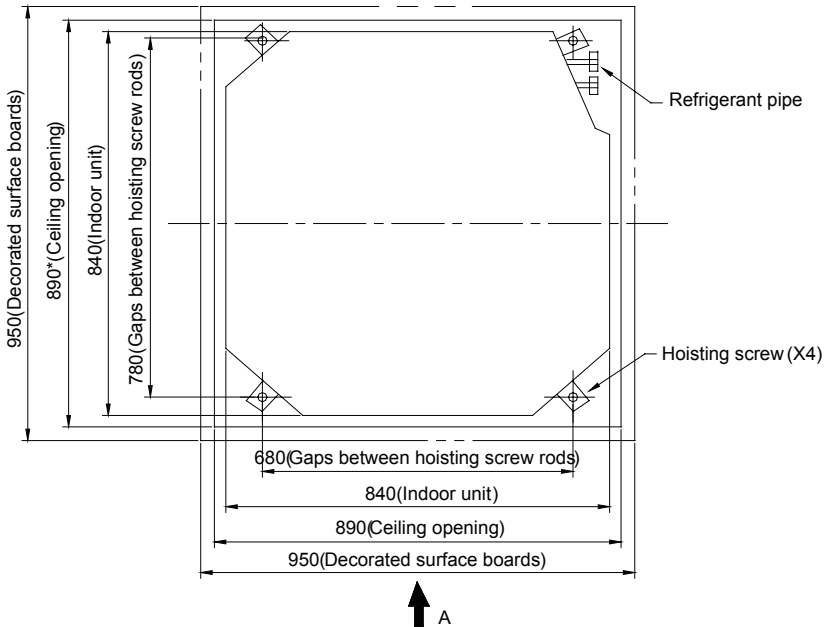


Fig.2 Install Dimension of Mode BMKH24CC1

- ◆ The drilling of holes in the ceiling must be done by the technicians.

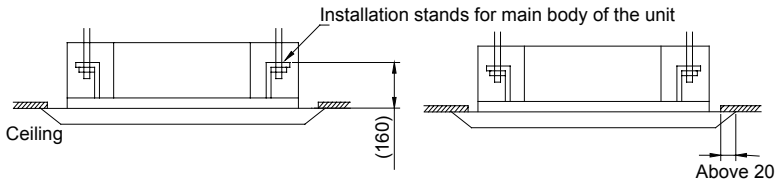


Fig.3

Notes: The dimension for the ceiling openings with \* marks can be as large as 910mm. But the overlapping sections of the ceiling and the decorated surface boards should be maintained at no less than 20mm.

## 2.5 Main Body of Hoisting Air Conditioner

(1). The primary step for installing the indoor unit.

◆ When attach the hoisting stand with hoisting screw, do use nut and gasket respectively at the upper and lower of the hoisting stand to fix it. The use of gasket anchor board can prevent gasket from breaking off.

(2). Use installation cardboard

◆ Please refer to the installation cardboard about the dimension of ceiling opening.

◆ The central mark of the ceiling opening is marked on the installation cardboard.

◆ Install the installation cardboard on the unit by bolts (3 pieces), and fix the angle of the drainage pipe at the outlet vent by bolt.

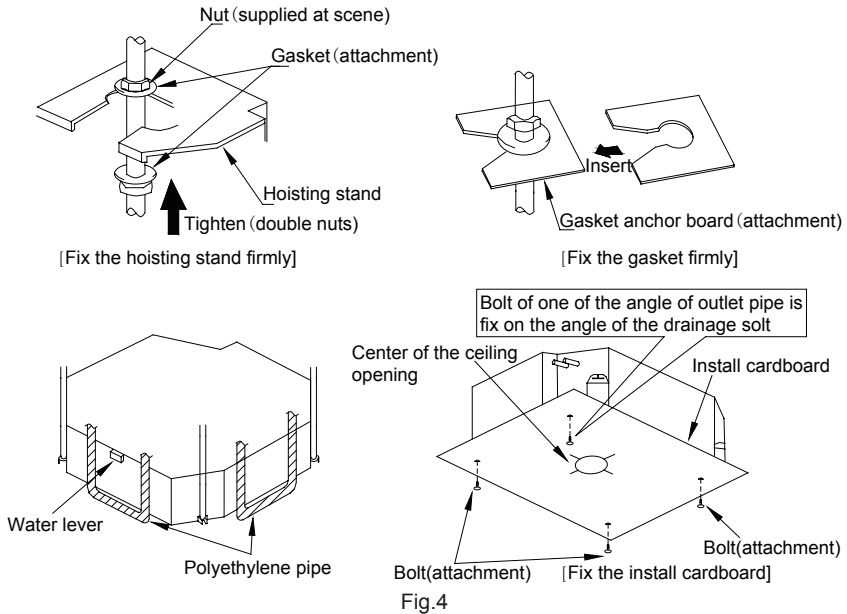
(3). Adjust the unit to the suitable install place. (Refer to the Fig.4)

(4). Check if the unit is horizontal.

◆ Inner drainage pump and float switch are included in the indoor unit, check if 4 angle of every unit are horizontal by water level. (If the unit is slant toward the opposite of the coagulate water flow, there may be malfunction of the float switch and lead water drop.)

(5). Back-out the gasket anchor board used to prevent gasket from breaking off and tighten the nut on it.

(6). Back-out the installation cardboard.



### ⚠ Note!

● Please do tighten the nuts and bolts to prevent air conditioner from falling down.

## 2.6 Connection of the Refrigerant Pipe

◆ When connect the pipe to the unit or remove it from the unit, please do use both spanner

and torque wrench. as shown in Fig.5.

- ◆ When connect, smear both inside and outside of the flare nut with freeze motor oil, screw it by hand and then tighten it with spanner.
- ◆ Refer to Table 1 to check if the nut has been tightened (tighten too greatly would damage the nut and lead to leakage).
- ◆ Examine the connection pipe to see if it has gas leakage, then take the treatment of heat insulation, as shown in the Fig.5.
- ◆ Only use medium-sized sponge to entwine the wiring interface of the gas pipe and heat insulation of the gas collection tube.

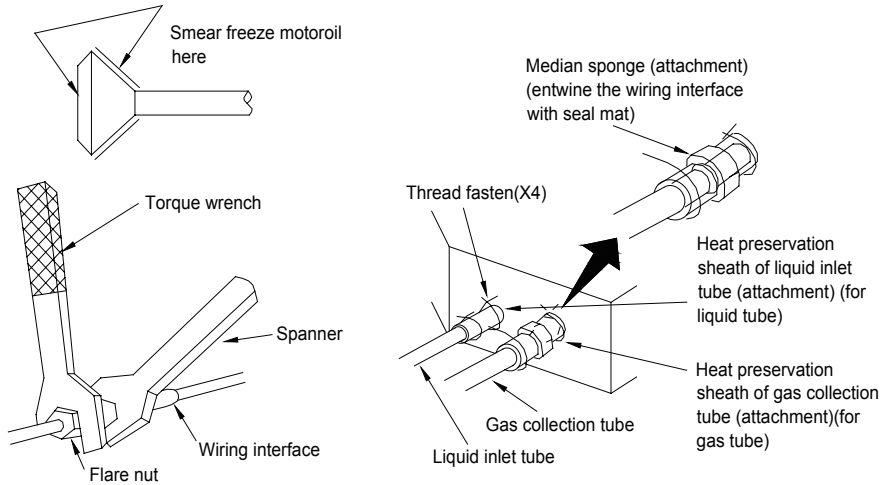


Fig.5

Table 1: The moment of torque for tightening nut

Diameter (Inch)	Surface thickness (mm)	Moment of torque (N · m)
φ1/4"	≥ 0.5	15-30 (N · m)
φ3/8"	≥ 0.71	30-40 (N · m)
φ1/2"	≥ 1	45-50 (N · m)
φ5/8"	≥ 1	60-65 (N · m)
φ3/4"	≥ 1	70-75 (N · m)

If the specification of the outdoor unit pipe joint does not conform to that of the indoor unit, then the joint specification of the outlet pipe of the indoor unit takes precedence. A reducing nipple shall be installed at the joint of the outdoor unit so as to make the joint of the outdoor unit compatible with that of the indoor unit.

## 2.7 Drain Hose

(1). Install the drain hose

- ◆ The diameter of the drain hose should be equal or larger than that of connection pipes. ( The diameter of polythene pipe: Outer diameter: 25mm; Surface thickness ≥1.5mm)
- ◆ Drain hose should be short and drooping gradient should at least 1/100 to prevent the

formation of air bubble.

- ◆ If drain hose cannot has enough drooping gradient, drain raising pipe should be added.
- ◆ To prevent bent of the drain hose, the distance between hoisting stand and the drain hose should be 1 to 1.5m.

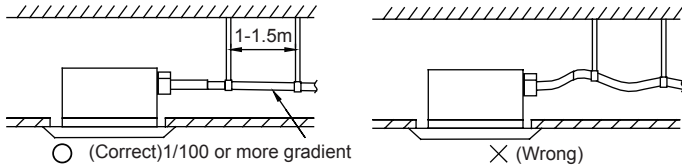


Fig.6

◆ Use the drain hose and clamp attached. Insert the drain hose to the drain vent, and then tighten the clamp.

- ◆ Wrap clamp with sponge on the drain hose to insulate heat.
- ◆ Heat insulation should be done to indoor drain hose.

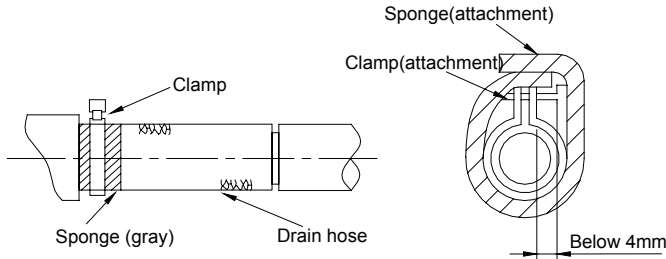


Fig.7

**Drain Stepup Pipe Note**

- ◆ The installation height of the drain raising pipe should less than 280mm.
- ◆ The drain raising pipe should form a right angle with the unit, and distance to unit should not beyond 300mm.

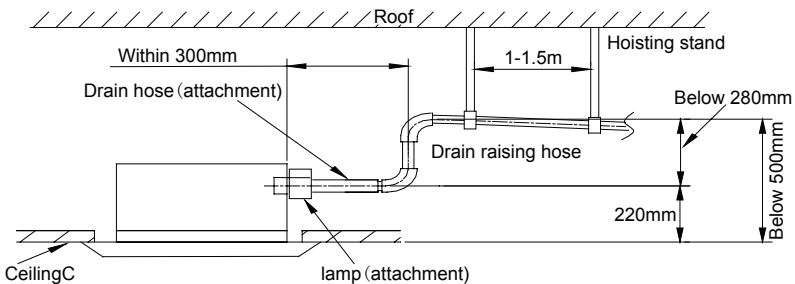


Fig.8

**Instruction**

- ◆ The fall of the attached drain hose should be within 75mm so that the joint of the drain pipe doesn't have to endure the unnecessary outside force.

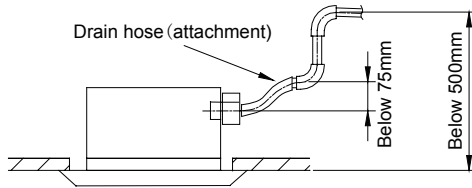
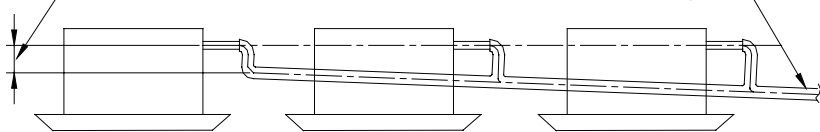


Fig.9

- ◆ Please install the drain hose according to the following process if several drain hoses join together.



The specs of the selected join drain hose should fits the running capacity of the unit

Fig.10

- (2). Check the drain state after installation

- ◆ Check the drain state by immitting 600ml water slowly from the outlet vent or test hole.
- ◆ Check the drain state under cooling mode after electric circuit installation work is done.

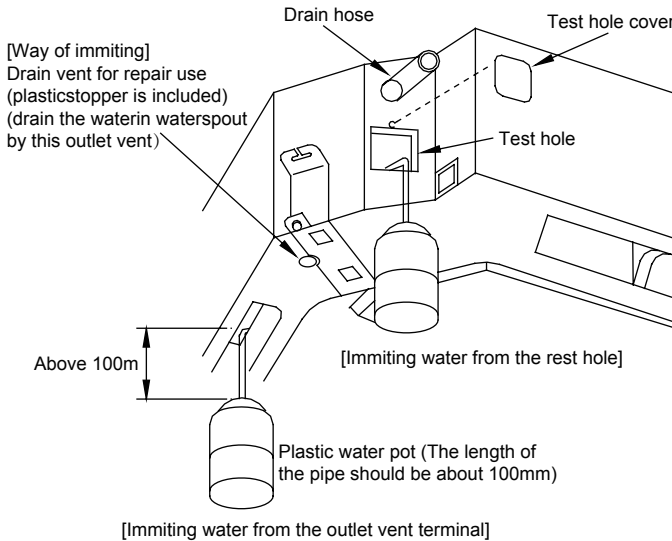


Fig.11

## 2.8 Electrical wiring

- ⚠ **Note:**The power of the entire indoor unit must be connected with outdoor unit.

- ◆ About the electrical wiring, please see the circuit diagram attached with the unit.
- ◆ All the installation of electrical wiring must be done by technicians.
- ◆ Please do take the earthing treatment.

### Wiring Method of Connection Unit and Controller

◆ Connection wiring (communication):

① Open electric box cover(1), drag the wiring (communication) from the rubber plug A, and impact them well individually by impact fastener.

② Wiring according to the indoor side circuit diagram.

◆ Fix the impact fastener after connection.

◆ Wrap the small-sized sponge on the electric wire (do entwine it to prevent condensation).

◆ Impact tightly by impact fastener after connection and then fit on the electric box (1) and (2).

◆ Put the 4-core cable through the hole of the chassis and the bottom of the appliance upward, and then connect the power line and the communication line from the outdoor unit to the corresponding terminals N(1), 2, 3, and grounding terminal of the indoor unit. Wiring shall be done properly as per the wiring diagram. (Note: Be sure the wiring terminals A/B/C/D and piping joints A/B/C/D of the indoor unit match with that of the outdoor unit respectively).

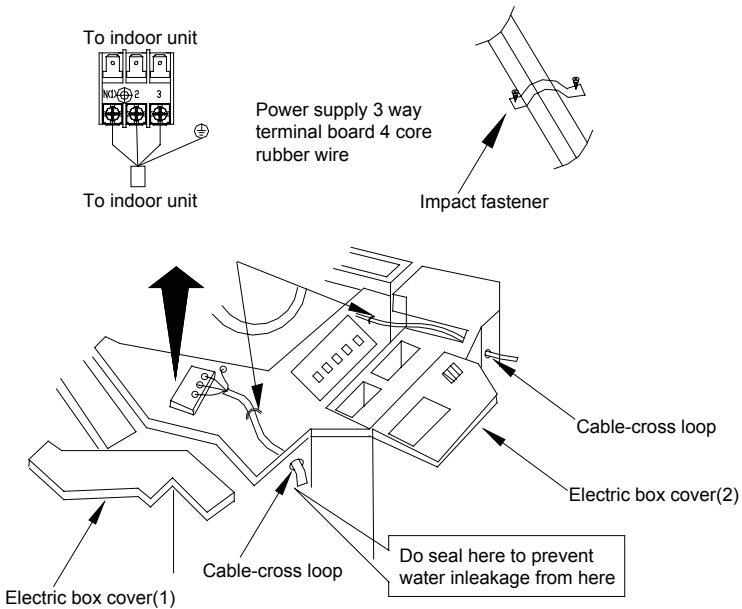
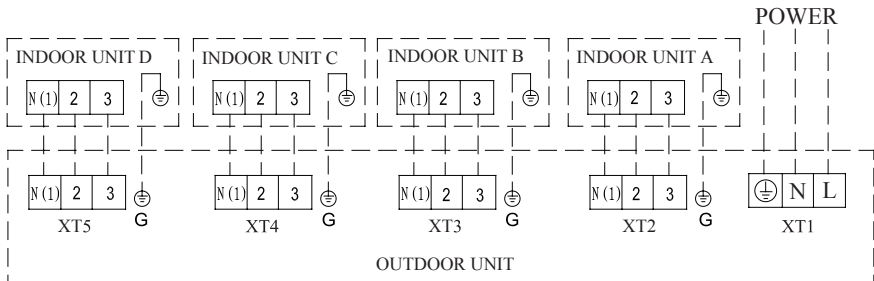
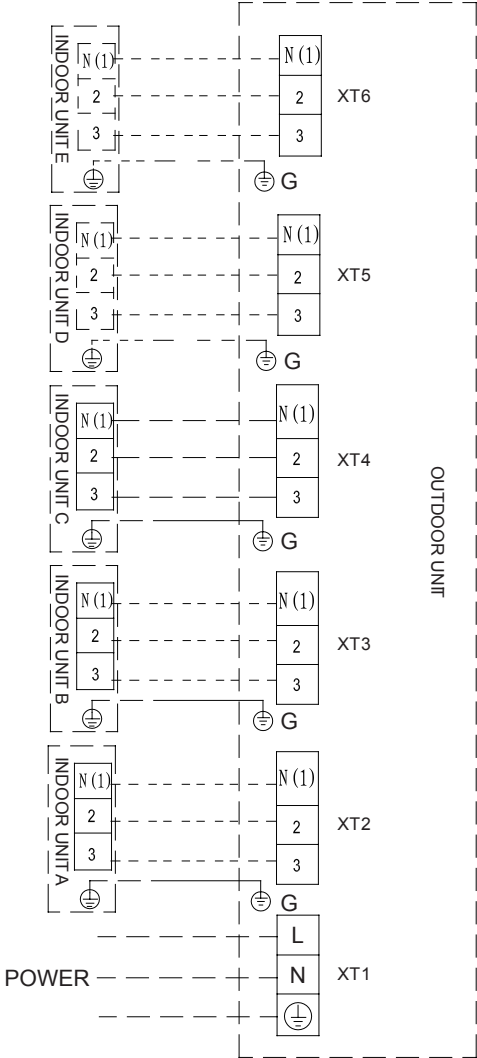


Fig.12

36K



BMKH42M-ND42



2.9 Install the Panel

1. Set the panel to the indoor unit body by matching the position of the swing flap motor of the panel to the piping position of the panel to the piping position of the indoor unit as shown by Fig.13.
2. Install the panel
  - (1). Install the panel on the indoor unit temporarily. When install, hang the latch on the hook that is located on the opposite side of the swing flap on the panel of the indoor unit. (2 positions)
  - (2). Hang the remaining 2 latches to the hooks on the sides of the indoor unit.(Be careful not to let the swing motor lead wire get caught in the sealing material.)

- (3). Screw the 4 hexagon head screws under the latches in about 15mm. (The panel would rise)
- (4). Adjust the panel by turning it toward the direction pointed by the arrow as shown in Fig.13, so that the adjust board connect the ceiling well.
- (5). Tighten the screws until the thickness of the sealing material between panel and indoor unit reduced to 5-8mm.

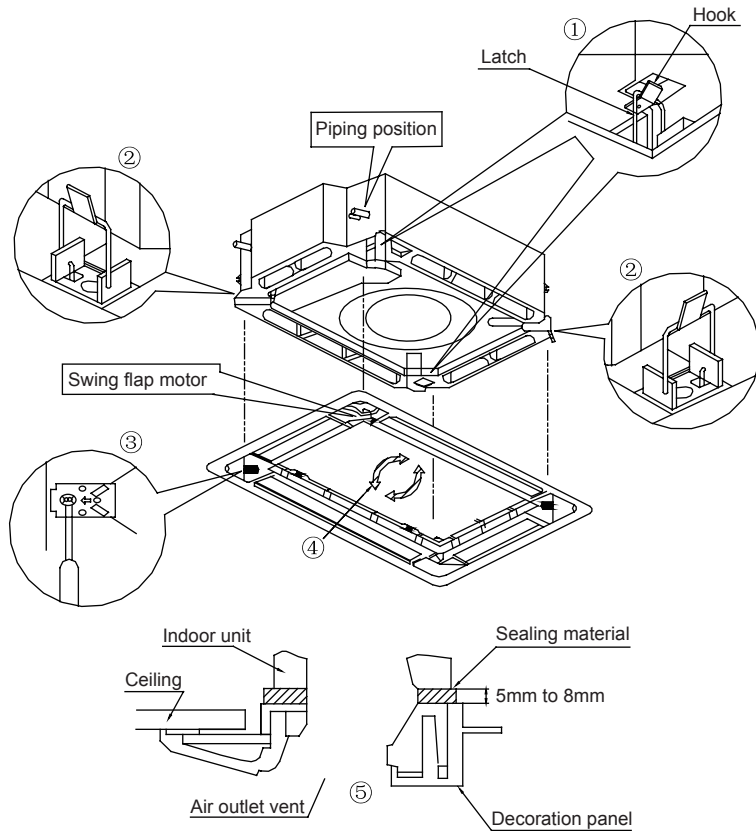


Fig.13

**Notes:**

- ① . Improper screwing of the screws may cause the troubles shown in Fig.14.

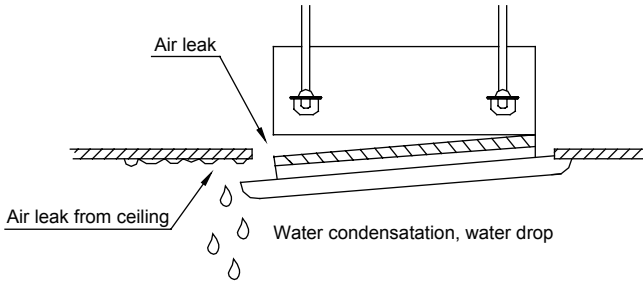


Fig.14

- ② . If gap still exist between ceiling and decoration panel after tightening the screws, readjust the height of the indoor unit. (As shown in Fig.15)

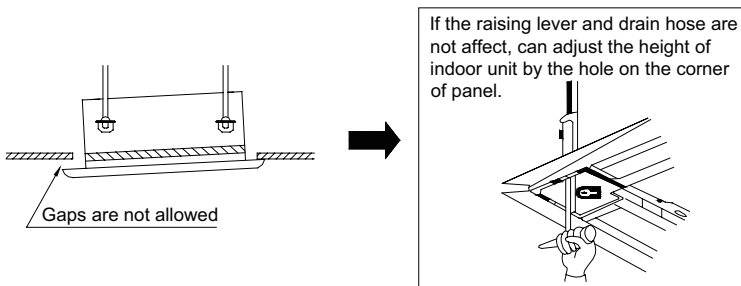


Fig.15

※ After fixing, be sure that there is no gap between the ceiling and the panel.

- ③ . Wiring of the decoration panel (Fig.16)

Connect the joints for swing flap motor lead wire (at 2 places) installed on the panel.

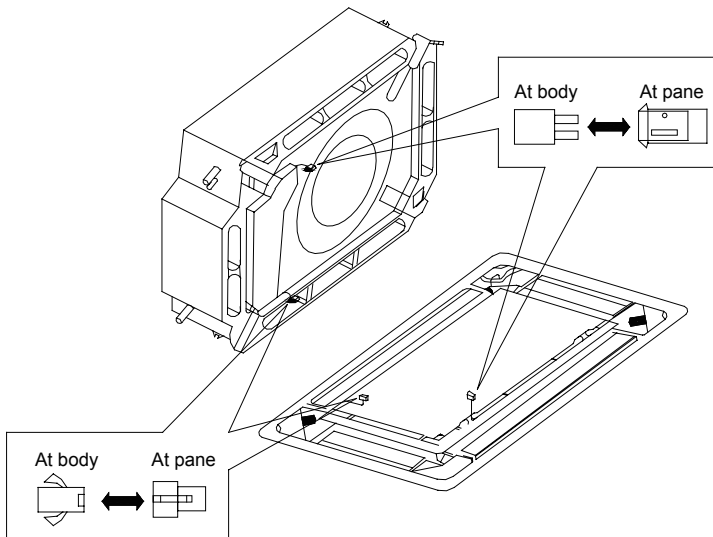


Fig.16

### 3 Parts and Components of Cassette Type Indoor Unit

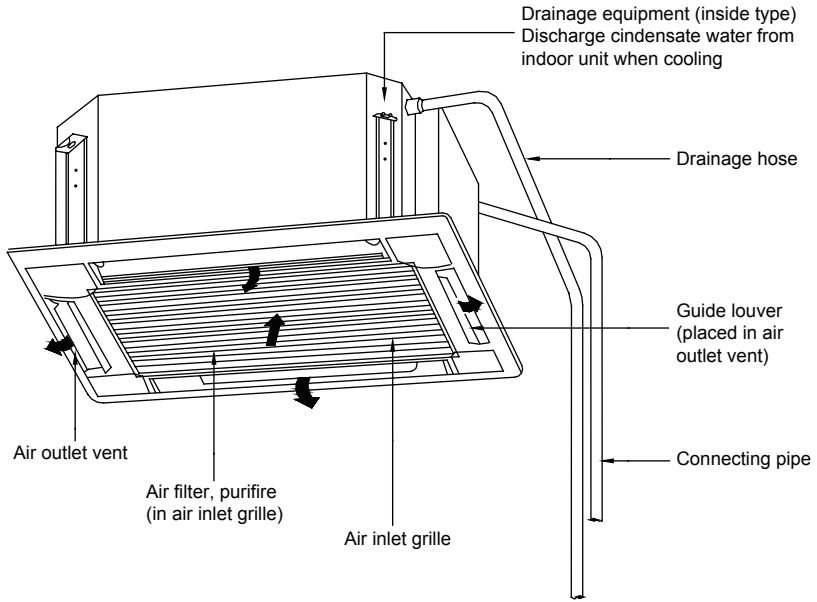


Fig.17 BMKH24CC1

### 4 Working Temperature Range

Working Temperature Range

	Indoor side state °F (°C)		Outdoor side state °F (°C)	
	Dry bulb temp. °F (°C)	Wet bulb temp. °F (°C)	Dry bulb temp. °F (°C)	Wet bulb temp. °F (°C)
Rated. Cooling	80.0(26.7)	67.0(19.4)	95.0(35.0)	75.0(23.9)
Max. cooling	80.0(26.7)	67.0(19.4)	115.0(46.1)	75.0(23.9)
Min. cooling	67.0(19.4)	57.0(13.9)	67.0(19.4)	57.0(13.9)
Rated. Heating	70.0(21.1)	60.0(15.6)	47.0(8.3)	43.0(6.1)
Max. heating	80.0(26.7)	—	75.0(23.9)	65.0(18.3)
Low Ambient heating	70.0(21.1)	60.0(15.6)	5.0(-15.0)	3.2(-16.0)

## 5 Trouble Shooting

### **Warning!**

◆ Cut down the main power switch immediately if malfunction (such as smell the burning odor etc.) happens, and then contact service center. If the abnormal state is maintained, the unit may be damaged or electric shock or fire may happen.

◆ Do not refit the conditioner. Please contact service center to repair or move the conditioner.

### ★ **Check the following items before contacting maintenance center**

Phenomena	Reason	Remedial Measures
Air conditioner doesn't run at all	Blow of fuse or breaker	Change fuse or close breaker
	Power cut	Restart when there is power supply
	Don't connect with power	Connect power well
	Low batteries of wireless remote controller	Change new batteries
	Wireless remote controller exceed remote control area	Signal could be received within 8m
Air conditioner runs but stops immediately	Blockage in inlet or outlet vent of indoor or outdoor unit	Clean out blockage
Abnormal cooling or heating	Blockage in inlet or outlet vent of indoor or outdoor unit	Clean out blockage
	Improper of temp. setting	Adjust settings in wireless remote controller
	Low setting of fan speed	Adjust settings in wireless remote controller
	Incorrect of wind direction	Adjust settings in wireless remote controller
	Door or window opened	Close
	Direct sun burn	Hang curtain or jalousie before windows
	Too many people in room	
	Too many heater in room	
	Filter blocked by dirt	Clean filter

### ★ **Instruction**

If problem still cannot be solved after above checking, please contact service center.

★ The following circumstance doesn't belong to malfunction

“Malfunction”		Reason
Air conditioner doesn't run	Start up unit immediately after turned off	The overload protects switch makes it run after 3 minutes delay.
	When opening power	Run for about 1 minute without other actions
Mist is blown from air conditioner	When cooling	The high humidity air in room is cooled rapidly
Noise is heard from air conditioner	Slight click sound heard once begin running	Sound of initialization for electric expand valve
	Hissing sound heard continuously when cooling	The sound for gas refrigerant flowing in the unit
	Hissing sound heard when starting or stopping	The sound for gas refrigerant stops flow
	Slight hissing sound heard when running or after running	Sound for running of drainage system
	Creak sound heard when running or after running	The grating sound caused by expands of panel and other parts for the change of temperature
Dust be blown for air conditioner	Started up after long time's doesn't runs	Dust in indoor unit be blown out
Odor gives out from air conditioner	When running	This is because when air conditioning, odors or cigarette smoke from the room that was sucked in is discharged again.

★ After-sales Service

If there is any quality or other issues after purchasing air conditioner, please contact the local service center.

## 6 Maintenance Method

**When the unit won't be used for a long time, please cut off the main power supply of air conditioner.**

### **⚠ Warning!**

◆ Do not turn off the unit and cut off the main power supply when cleaning the air conditioner, otherwise electric shock or harm may happen.

◆ It is forbidden to wash air conditioner by water rinsing, otherwise electric shock may happen.

### 6.1 Cleaning Air Filter

When the usage environment has lots of dust, air filter should be cleaned more frequently (about once 6 months).

(1). Open air inlet grille

Pull the 2 handles on air inlet grille at the same time with the direction showed by arrow in Fig. 18, pull it down slowly. (As per the reverse disassembly order when closing)

(2). Disassemble air filter

As shown in Fig. 19, pull the handle behind air inlet grille, raise it and disassemble. Then remove the 3 purifiers fixed on filter.

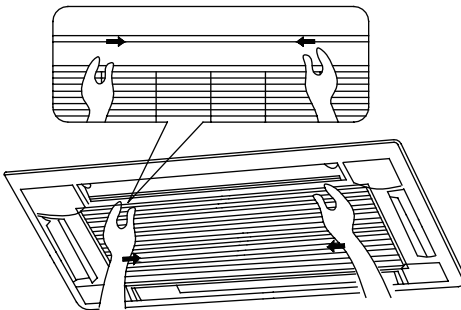


Fig. 18

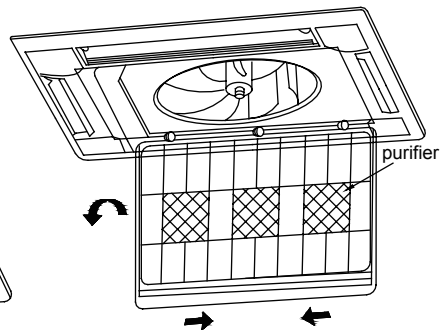


Fig. 19

(3). Clean

Use a cleaner or some water to wash filter; if the filter is too dirty ( like oil stain on it ), use some warm water ( lower than 45℃ ) with neutral detergent to clean it, then dry it in the shade.

### **⚠ Note!**

Do not clean the filter by hot water which temp. is higher than 45 ℃ to prevent fading or deformation.

Do not place the filter near fire; otherwise the filter may catch fire or lead to deformation.

(4). Install air filter

Fix the 3 purifiers on filter, install filter on the several bulges on top of air inlet grille, pull the handle behind air inlet grille toward inside to fix filter. As shown in Fig. 20.

(5). Close air inlet grille (Refer to the 1<sup>st</sup> step)

Maintenance Method

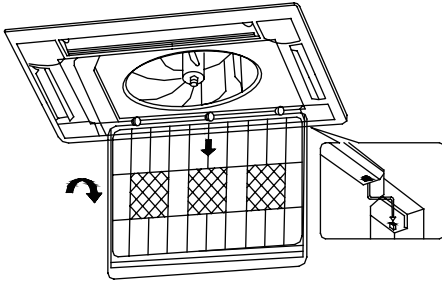


Fig. 20

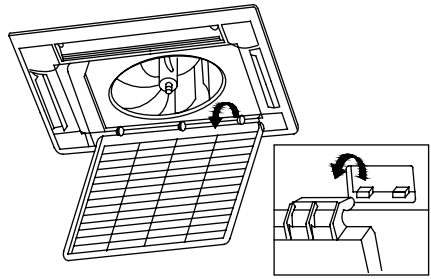


Fig. 21

## 6.2 Clean Air Inlet Grille

- (1). Open air inlet grille (the same with the 1st step of Clean Air Filter)
- (2). Take out air filter (the same with the 2nd step of Clean Air Filter)
- (3). Take out air inlet grille

Open air inlet grille for an angle of 45°, as shown in fig. 21, raise it.

- (4). Clean

Clean it by soft brush, water and neutral cleaning, then dry it after cleaning.

### ⚠ Note!

Do not use water above 45°C to wash the panel to prevent fading or deformation.

- (5). Install air inlet grille (refer to 3rd step)
- (6). Install air filter (refer to the 4th step of Clean Air Filter)
- (7). Close air inlet grille (refer to the 1st step)

## 6.3 Install and Change of Air Purifier

- (1). Open air inlet grille (the same the 1st step of Clean Air Filter)
- (2). Disassembly purifier

As shown in fig 22, disassembly air filter, screw out fixing bolts fixed on purifier on filter, then purifier could be disassembly.

- (3). Take out the package sack of static fiber net filter, then install the filter in stand of purifier, and fix purifier on air filter.
- (4). Install air filter (the same with the 4th step of Clean Air Filter)

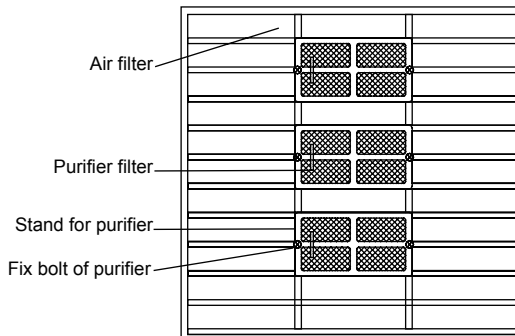


Fig.22

#### **Function and usage period for air purifying**

- ◆ Adsorb CO, CO<sub>2</sub>, benzene, aldehydes and odor of gasoline etc..
- ◆ Adsorb poisonous material that is smaller than 1μm in air, as dust, pollen, bacteria, and virus.
- ◆ Usage period is 6 months to 1 year. If it is necessary to be changed, purchase new purifier in the nearest Blueridge special engaged maintenance center.

#### **6.4 Clean Outlet Vent and Surface Panel**

- ◆ Clean the surface panel by soft dry cloth or wet cloth with neutral scourer.
- ◆ It is forbidden to clean surface panel by gasoline, benzene, diluents, cleansing powder etc..
- ◆ If the guide louver is too dirty, it may be removed to be cleaned. (As narrated below)

#### **Disassembly and installation of guide louver**

(1). Disassemble guide louver

Screw bolts in both ends of guide louver to loose.

#### **Note!**

Do not forcibly wipe guide louver when cleaning, otherwise painted surface layer would fall off.

(2). Install guide louver

Rotate guide louver slightly could install the protruding edge of both end into grooves on both end of guide louver, and then tighten bolts.

#### **6.5 Maintenance before or after Seasonal Use**

##### **Check before the seasonal use**

- ◆ Check if there is blockage at inlet or outlet of air conditioner.
- ◆ Check if the earthing wire has been earthed reliably.
- ◆ Check if the air filter has been installed well.
- ◆ In order to start up the air conditioner smoothly after long time's turned off, turn on the main power supply 8 hours before turning on the air conditioner.

##### **Maintenance after seasonal use**

- ◆ Clean filter and body of air conditioner.
- ◆ Cut off the main power supply of air conditioner.
- ◆ The cooling or heating capacity and sound level are tested before leaving factory.
- ◆ If the parameter changes, refer to the data offered on nameplate.





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